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CURRENT LITERATURE

BOOK REVIEWS

North American gymnosperms

Professor PENHALLOW has written a very painstaking and a unique book[1] on gymnosperms. He has taken the North American species (exclusive of cycads), living and fossil, and has constructed a system of classification based upon the anatomy of the mature wood. The original plan had in view the identification of material used for structural purposes; but the investigation soon included the needs of paleobotany, and finally led to suggestions as to phylogeny. The final result includes detailed studies of 92 North American species, 21 Japanese, and 4 Australasian. The enormous mass of detail to be sifted and organized before any satisfactory differential characters based upon wood structure could be made evident can be imagined.

The book is divided into two parts, the first entitled "Anatomy," the second "Systematic." Under anatomy (192 pp.) a detailed account of the regions and elements of mature gymnosperm wood is given, including discussions of durability, decay, and general phylogeny. In the systematic part (157 pp.) a synopsis of the genera and species of Cordaitales, Ginkgoales, and Coniferales is presented, based entirely on wood characters, and including so far as possible the economic values.

Probably the most interesting portion of the book to the general botanist is the chapter devoted to phylogeny. The author has given an excellent illustration of the result of following one set of characters in reaching conclusions as to phylogeny. Morphologists and paleobotanists and anatomists of a different sort have done this before, and with results equally divergent. The morphologists have been checked more frequently than the others, perhaps, for they have been compelled to carry through many different structures that insist upon contradicting one another in reference to any suggested phylogenetic connection. In these latter days, however, morphology, anatomy, and paleobotany are beginning to combine their results in any conclusion as to phylogeny, and the contradictions are multiplying. Professor PENHALLOW has introduced another set of checks, which must either be incorporated in any general conclusions or explained away. He recognizes clearly that his scheme of phylogeny cannot stand, a statement which is true of any scheme based upon one set of characters; but he presents it to be combined with the others in the general result. When different schemes flatly contradict one another, it remains to discover the characters that should control, and this becomes a matter of opinion rather than of demonstration.

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[1] PENHALLOW, D. P., A manual of the North American gymnosperms, exclusive of the Cycadales but together with certain exotic species. 8vo. pp. viii+374. *pls*. 55. Boston: Ginn & Co. 1907.

On the basis of wood anatomy, as interpreted by PENHALLOW, a phylogeny of the gymnosperms is constructed that certainly contradicts many of the conclusions that have been drawn from the other methods of attack. From the Cycadofilices two great divergent lines arise, one being the Cycadophytes, the other the general conifer-like plexus; this view seems reasonable enough. The conifer-like forms are thought to have been derived through such forms as Poroxylon, which in turn forked into Cordaitales and another branch which forked into Ginkgoales and Coniferales. It is interesting to note that the araucarians are made a branch of the Cordaitales stock. The Taxaceae (taxads and podocarps) are made the earliest side branch of the Coniferales stock; then come the Taxodineae, the Cupressineae, and finally the Abietineae, whose most modern and specialized expression is Pinus. Just how this phylogeny can be related to that of Jeffrey, for example, to say nothing of the phylogeny of modern morphology, is not clear. Either mature wood structure is not significant in phylogeny, or there will have to be an extensive revision of our former conclusions.

At all events, it is a good thing to have these facts before us; and the book will certainly be highly useful in its practical applications and also as a great assistance in the recognition of fossil material.—J. M. C.

NOTES FOR STUDENTS

Items of taxonomic interest.—W. N. CLUTE (Fern Bull. **16**: 1, 2. 1908) has described a new Asplenium from Arizona.—C. B. ROBINSON (Bull. Torr. Bot. Club **35**:63–75. 1908) has begun a series of contributions bearing the title "Alabastra philippinensis," the first one containing descriptions of 12 new species.—P. C. STANDLEY (*idem* 77–78) discusses certain New Mexican forms of Echinocereus and describes a new species.—H. D. HOUSE (*idem* 89–90) has described 2 new species of Evolvulus from the Bahama Islands.—E. GILG (Bot. Jahrb. **40**:444–518. 1908), in an account of the African Flacourtiaceae, describes numerous new species and the following new genera: *Trichostephanus*, *Marquesia*, and *Ophiobotrys*.—A. ENGLER (*idem* 519–572), among numerous new species of African plants, describes species under Gnetum, Loranthus (30), Viscum (7), and Garcinia (22), and a new genus (*Acanthotreculia*) of Moraceae.—B. L. ROBINSON (Rhodora **10**:29–35. 1908) has revised the nomenclature of a number of plants of the northeastern United States, chiefly of minor varieties and forms, and includes the description of a new Woodsia from Minnesota and Michigan.—G. HIERONYMUS (Hedwigia **47**:204–224. *pls. 1–4*. 1908), in an account of the pteridophytes of STÜBEL'S South American collections, describes new species under Diplazium (8) and Asplenium.—R. KELLER (Bull. Herb. Boiss. II. **8**:175–191. 1908), in a revision of Hypericum § Brathys, recognizes 21 species, 6 of which (from South America and Mexico) are described as new.—L. L. CAPITAINE (*idem* 251–253) has described a new genus (*Hyalocalyx*) of Turneraceae from Madagascar.—